

November 12, 2013

Thomas Mansfield, Septic Officer
Spencer Harris, Septic Consultant
Town of Charlotte
P.O. Box 119
Charlotte, VT 05445

RE: Testamentary Trust of Clark W. Hinsdale Jr. (the Trust), Parcel B, Guinea & Bingham Brook Roads-Submittal of Water/Wastewater Application

Dear Tom & Spencer:

The Trust's Parcel B is +/- 153.8 acres in size and is located on the northeast corner of the intersection of Guinea Rd and Bingham Brook Rd. It's being sold to a party who are proposing to construct a 4 bedroom (7 occupant) residence and a separate detached 2 bedroom (4 occupant) apartment over a garage (for a caretaker and guests). The structures will be served by on-site water and wastewater systems. The Site Development Plan is shown on Figure 1 and enlarged views of the building area and mound disposal area are shown on Figure 2. Wastewater and water system details are shown on Figure 3 and 4.

While the soils in the building area were not found to be suitable for sewage disposal purposes, an area on the south side of the property was found acceptable for a shared 11 occupant performance based mound. The soil profile was evaluated on October 21, 2013 with 11 test pits by myself with Spencer in attendance. As the attached soil profile descriptions show, 10' of well drained very fine to fine sandy loams were identified with moderate to strong fine blocky structure. The soils are permeable, evidenced by the attached percolation results which show a 41.8 minute/inch percolation rate which sanctions a 1.0 gpd/ft² application rate, 0.74 gpd/ft² basal application rate, and 1 on 3 mound toes. A Site Specific Effluent Mounding Analysis is attached which indicates the need of a 136' long mound with 2.5' of State approved mound sand. The pressure distribution and mound dimension details are presented which indicate a 5.7' x 136' application area with effluent supplied to 2-66' laterals. Each structure will have their own 1000 gallon septic tank which will be connected to a common 1500 gallon pump station. The hydraulic analysis indicates the need of an effluent pump capable of pumping 24.4 gpm versus 47.4' TDH. I've attached a pump specification which meets this requirement.

As far as the shared well and water system, I've shown the proposed well, the water services and the proposed water system. In this regard, I've sized the hydropneumatic tank and the pump for the well quite conservatively. As you know after the well is

drilled, I will do a final design which will also require the Table 11-5 and Table 11-7 water quality results.

From an isolation standpoint, the 200' default isolation zone around the well and the 100' x 200' mound isolation zone are totally located on the subject property. Because the 2 isolation zones do not fall on any adjoining property, the Trust is exempt from the Act 117/145 notification process. In this regard, I've included the signed ANR Form 5 for your review.

I believe the application package is complete with a signed application and ANR Form 5; a \$500.00 application fee payable to the Town of Charlotte; 2 signed copies of Figures 1, 2, 3 and 4; 1 signed 11" x 17" copy of Figures 1, 2, 3 and 4; 1 copy of this letter and the attachments; and 1 CD of the whole application. The Trust looks forward to the issuance of the requested permit so that the property can be transferred and house construction started.

If you have any questions, please give me a call.

Very truly yours,

Lincoln Applied Geology, Inc



Stephen Revell, CPG
Licensed Class B Designer #178
Senior Hydrogeologist

Enclosure

CC: Testamentary Trust of Clark W. Hinsdale Jr.
Johns Congdon

F:\CLIENTS\2013\13137\Submittal Letter.docx



Lincoln Applied Geology, Inc.
Environmental Consultants

163 Revell Drive • Lincoln, VT 05443 • (802) 453-4384 • FAX (802) 453-5399 • www.lagvt.com

Drinking Water & Groundwater Protection Division - Permit Application Wastewater System & Potable Water Supply



For Office Use Only:

Application#	PIN#	Date Complete Application Received
<input type="text"/>	<input type="text"/>	<input type="text"/>

Authority:

10 V.S.A. Chapter 64, the Environmental Protection Rules, Chapter 1, Wastewater System & Potable Water Supply Rules, and Chapter 21, Water Supply Rules, Appendix A. Part 11 - Small Scale Water Systems.

General Information:

The organization and/or content of this form may not be altered, however, the form is designed to expand to allow additional information to be entered. Changes in the organization and/or content of the form may result in an invalid application or permit.

In most cases a licensed designer will be required for your project and to help complete this application form. There are also line-by-line instructions available to assist with completing this form.

NOTE: We strongly suggest referring to the application instructions while completing this application form.

Part I Applicant (Landowner) & Project Contact Information

Section A - Applicant Details (if Landowner is an Individual or Individuals)

1 Last Name		2 First Name (and Middle Initial if appropriate)	
<input type="text"/>		<input type="text"/>	
3 Mailing Address Line 1		4 Mailing Address Line 2	
<input type="text"/>		<input type="text"/>	
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
<input type="text"/>	<input type="text"/>	United States	<input type="text"/>
9 Email Address			10 Telephone
<input type="text"/>			<input type="text"/>

Remove This Applicant

Add Another Applicant

Section B - Applicant Details (if Landowner is other than an Individual or Individuals, e.g. Corporations, Homeowner's Associations, etc.)

1 Registered Legal Entity or Organization Name			2 Telephone
Testimentary Trust of Clark W. Hinsdale Jr.			<input type="text"/>
3 Mailing Address Line 1		4 Mailing Address Line 2	
1211 Ethan Allen Highway		<input type="text"/>	
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
Charlotte	VT	United States	05445

Certifying Official

The Certifying Official must be a person who has signatory authority for the legal entity or organization that is the Applicant.

9 Certifying Official Last Name		10 Certifying Official First Name (and MI if appropriate)	
Hinsdale III		Clark W.	
11 Certifying Official Title			
Agent			
12 Certifying Official Email Address			13 Telephone
<input type="text"/>			<input type="text"/>

Remove This Applicant

Add Another Applicant

Section C - Primary Contact Information (if other than Applicant)			
1 Last Name		2 First Name (and Middle Initial if appropriate)	
3 Mailing Address Line 1		4 Mailing Address Line 2	
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
		United States	
9 Email Address			10 Telephone

Section D - Building/Business Owner Information			
1 Last Name		2 First Name (and Middle Initial if appropriate)	
3 Mailing Address Line 1		4 Mailing Address Line 2	
5 Town/City	6 State/Province	7 Country	8 Zip/Postal Code
		United States	
9 Email Address			10 Telephone

Part II Certifying Designer(s) Information			
1 Designer Last Name		2 Designer First Name (and Middle Initial if appropriate)	
Revell		Stephen	
3 Designer License#	4 Company Name		
178	Lincoln Applied Geology, Inc.		
5 Mailing Address Line 1		6 Mailing Address Line 2	
163 Revell Drive			
7 Town/City	8 State/Province	9 Country	10 Zip/Postal Code
Lincoln	VT	United States	05443
11 Email Address			12 Telephone
srevell@lagvt.com			453-4384
13 Designer Role(s) (check all that apply)			
<input checked="" type="checkbox"/> Water Supply Designer <input checked="" type="checkbox"/> Wastewater Disposal System Designer			
<div style="background-color: yellow; display: inline-block; padding: 2px 10px;">Remove This Designer</div>			
<div style="background-color: green; color: white; display: inline-block; padding: 2px 10px;">Add Another Designer</div>			

Part III Property Location Information	
Section A - Property Location	
1 Please provide the property Town and the property address or a brief description of the location.	
(a) Town or City	(b) Street or Road Location
Charlotte	Guinea Road & Bingham Brook Road

Section B - Center of Property GPS Coordinates

1 Enter the approximate center of property coordinates using GPS set for NAD83 or as derived from a map (map must be based on NAD83).

(a) Latitude (in decimal degrees to five decimal places, ex. 44.38181°) (b) Longitude (in decimal degrees to five decimal places, ex. -72.31392°)

N ° W (-) °

Part IV Project Information

Section A - General Project Information & Questions

1 Project Name (if applicable) <input type="text" value="Hinsdale Parcel B Project"/>	2 Total Acreage of Property <input type="text" value="153.8"/>
--	---

3 Business Name (if applicable)

4 Detailed Project Description

5 (a) Were all existing buildings or structures, campgrounds, and their associated potable water supplies and wastewater systems substantially completed before January 1, 2007? Yes No

(b) Were all existing improved and unimproved lots in existence before January 1, 2007? Yes No

6 Does this application include subdividing the property? Yes No

7 Has anyone from the Drinking Water & Groundwater Protection Division's Regional Office been to the property? Yes No

If Yes, enter the staff person's name and the date of the visit.

(a) Name of Staff Person <input type="text" value="Spencer Harris"/>	(b) Date of Visit (m/d/yyyy) <input type="text" value="10/13/2013"/>
---	---

8 Will any construction occur within 50 feet of a wetland boundary, mapped or designated? Yes No

If Yes, contact the Wetlands Program of the Watershed Management Division at (802) 338-4835.

9 Will more than one acre be disturbed during the entire course of construction, including all lots and phases? Yes No

If Yes, contact the Stormwater Program of the Watershed Management Division at (802) 241-4320.

10 Will there be any stream crossings by roads, utilities, or other construction? Yes No

If Yes, contact the River Corridor Mgmt. Program of the Watershed Management Division at:

Central & Northwest Vermont	(802) 879-5631
Southern Vermont	(802) 786-5906
Northeastern Vermont	(802) 751-0129

11 Is the project located in a special flood hazard area as designated on the flood insurance maps prepared for a municipality by the Federal Emergency Management Agency? Yes No

If Yes, show the special flood hazard area limits on the site plan.

12 Act 250: Has the Applicant (Landowner) subdivided any other lots of any size within a five mile radius of this subdivision, or within the environmental district within the last five years? Yes No

If Yes, enter the town(s) and the associated number of lots in the table below:

	(a) Town	(b) Number of Lots
X	<input type="text"/>	<input type="text"/>
<input type="button" value="Add Another Town/Lot"/>		

13 Is there any prior Act 250 jurisdiction on the tract of land? Yes No

If Yes, enter the Act 250 permit number:

(a) Act 250 Permit Number

Section B - Project Deed Reference

1 Please provide the Town, Parcel ID, Book, and Page reference for the current landowner's deed(s) to this property:

	(a) Town	(b) Parcel ID	(c) Book	(d) Page(s)
X	Charlotte	00022-0839	47	565-567
X	Charlotte	00022-0839	49	461-463

Add Another Deed Reference

Section C - Project Plan Reference

1 Please provide the following information for all water supply and wastewater disposal system plans being submitted.

	(a) Sheet#	(b) Title	(c) Plan Date	(d) Plan Revision Date
X	1	Site and Residential Development Plan	11/11/2013	
X	2	Enlarged Septic and Site Plan	11/11/2013	
X	3	Wastewater System Design Detail	11/11/2013	
X	4	Water System Design Details	11/11/2013	

Add Another Plan Reference

Section D - Existing Project Lot/Building Details

Please provide the existing project details. This section is used to describe what is existing for the project. For example, if you are subdividing an undeveloped 21-acre parcel, you would list the existing parcel. If you are revising the boundary lines of two commercial lots in an industrial park, and constructing an addition to an existing building you would list the existing lot numbers, existing acres, existing buildings, existing uses, construction date(s), prior permits, and answer the compliance questions.

1 Lot#	2 Lot Size (acres)	3 Existing Use of the Lot
1	153.8	Undeveloped Agricultural Land

4 Provide the following information for each building on the lot:

	(a) Building ID	(b) Existing Use	(c) Date Construction of Building Substantially Complete	(d) Prior Permits	(e) In compliance with existing permits?
X					<input type="radio"/> Yes <input type="radio"/> No

Add Another Building

Remove This Lot

Add Another Lot

Section E - Proposed Project Lot/Building Details

This section is used to describe what you are proposing to do in this project. For example, if you were going to create 4 lots for construction of single family residences, you would list each lot, proposed acreage, proposed buildings, and proposed use.

1 Lot#	2 Lot Size (acres)	3 Proposed Use of the Lot
1	153.8	Single Family Development

4 Is the lot being created as part of a subdivision? Yes No

5 Are you requesting that the Blood, Marriage, or Civil Union special fee be applied to this lot? Yes No

6 If the lot is exempt, please indicate the specific exemption from the Wastewater System and Potable Water Supply Rules?

7 Provide the following information for each building on the lot:

	(a) Building ID	(b) If building is exempt, indicate exemption	(c) Construction or increased flow?	(d) Proposed Use
X	1		<input checked="" type="checkbox"/>	4 Bedroom Residence

Add Another Building

Remove This Lot

Add Another Lot

Part V Water Supply Information

Section A - Water Supply Screening Questions

- 1 Are you proposing a new water supply or water service line or changes to a permitted but not constructed water supply or water service line for this project? Yes No
- 2 Are you proposing changes to an existing water supply or water service for this project (including changes to location, design flows, or operational change)? Yes No
- 3 Is there an existing connection to a water supply or water service line for this project? Yes No

Complete Part V if you answered Yes to any of the above questions. A project with no existing or proposed water supply may skip to Part VI.

Section B - General Water Supply Questions

- 1 Does this project involve a failed water supply? Yes No
- 2 Will any of the proposed water sources serve 25 or more people or have 15 or more service connections? Yes No
If Yes, the applicant must contact the Drinking Water & Groundwater Protection Division at (802) 241-3400 for source, construction and an operating permit.
- 3 Are any of the existing or proposed water sources located within a special flood hazard area? Yes No
- 4 Are any of the existing or proposed water sources located within a floodway? Yes No
- 5 Are any of the proposed water sources located within 1 mile of a hazardous waste site as designated by the Waste Management Division and identified on the Agency mapping website? Yes No
If Yes, please submit additional information on the site. The Waste Management Division can be reached at (802) 241-3888.
- 6 Does this project require an approval letter from the Drinking Water & Groundwater Protection Division for the construction of a public water system, municipal water line extension over 500 feet, or hydrants or sprinkler systems? Yes No
If Yes, please submit a copy of the approval letter from the Drinking Water & Groundwater Protection Division.
- 7 Does the proposed or existing water supply(ies) use a water treatment device to obtain compliance with the quality requirements in the Water Supply Rule? Yes No
If Yes, please submit additional information regarding the constituent(s) that exceeds the standards and plans, details, and specifications of the treatment device.
- 8 Is any portion of the proposed water supply located in or near a Water Source Protection Area as designated by the Drinking Water & Groundwater Protection Division? Yes No
If in areas of known interference issues, contact the Drinking Water & Groundwater Protection Division at (802) 241-3400.

Section C - Individual Water Supply Details

Please provide the following information for each of the existing and proposed water supply(ies) serving a building or structure, or campground on the property.

1 Water Supply Name/Identifier Lot 1 Well	2 Water Supply Owner (if not Applicant)
3 Water Source Type Non-Public Drilled Bedrock Well	4 Type of Change to Supply New System

5 Lots/Buildings Served by this Water Supply System

	(a) Lot#	(b) Building ID	(c) Type of Change to the Building's Supply	Design Flows (Gallons Per Day)			(g) Rule or Meter Based Flows
				(d) Existing	(e) Change	(f) Total	
X	1	1	Connection to New System	0	490	490	Rule-based
X	1	2	Connection to New System	0	280	280	Rule-based

Add Another Lot/Building Served by this Supply

6	7	8
0	770	770

9 Is this water supply located off-lot? Yes No

10 Is this water supply shared? Yes No

If the water supply is located off-lot or shared, submit a copy of the agreement to provide an easement prior to construction.

11 Is a variance being requested for this water supply? Yes No

If Yes, please submit additional details related to the variance request.

Remove This Water Supply

Add Another Water Supply

Section D - Water Supply Design Flows Summary Table

1 If the project includes more than one water supply, please list each water supply system and provide the total water supply design flows for the project. **IMPORTANT:** Please don't include systems that were identified in this Part on Section C, Line 4 as a "Replacement Area Designation" in this summary table.

(a) Water Supply Name/Identifier	Design Flows (Gallons Per Day)		
	(b) Existing	(c) Change	(d) Total
X Lot 1 Well	0	770	770
	2	3	4
	0	770	770

Add Another Water Supply

Part VI Wastewater Disposal System Information

Section A - Wastewater Disposal System Screening Questions

1 Are you proposing a new or replacement wastewater disposal system, a new wastewater service line, or changes to a permitted but not constructed wastewater disposal system or wastewater service line for this project? Yes No

2 Are you proposing changes to an existing wastewater disposal system, replacement wastewater disposal system, replacement area, or wastewater service line for this project (including changes to location, design flows, or operational change)? Yes No

3 Is there an existing connection to a wastewater disposal system or wastewater service line for this project? Yes No

*Complete Part VI if you answered Yes to any of the above questions.
A project with no existing or proposed wastewater disposal systems may skip to Part VII*

Section B - General Wastewater Disposal System Questions

1 Does this project involve a failed wastewater disposal system? Yes No

2 Do any of the systems require a curtain or dewatering drain as part of the design? Yes No

3 Is a hydrogeologic study required for this project? Yes No

4 For projects using soil-based wastewater systems having a total design flow that exceeds 1,000 gpd, is this project located in a Class A Watershed? Yes No NA

If Yes, indicate the Class A Watershed in which the system(s) is located:

(a) Class A Watershed Name

5 Are there any existing or proposed floor drains as part of this project? Yes No

If Yes, indicate where the floor drains will discharge:

(a) Floor Drain Discharge Point

6 If the project utilizes an Innovative/Alternative System or Product, has the applicant received a copy of the Drinking Water & Groundwater Protection Division's approval letter? Yes No NA

7 Is any portion of the proposed wastewater disposal system located in or near a Water Source Protection Area as designated by the Drinking Water & Groundwater Protection Division? Yes No

If Yes, contact the Drinking Water & Groundwater Protection Division at (802) 241-3400.

Section C - Individual Wastewater Disposal System Details

Please provide the following information for each of the existing and proposed wastewater disposal systems serving a building or structure, or campground on the property.

1 Wastewater Disposal System Name/Identifier Lot 1 Mound	2 Wastewater Disposal System Owner (if not Applicant)
3 Wastewater Disposal System Type Mound	4 Type of Change to System New System

5 Lots/Buildings Served by this Wastewater Disposal System

	(a) Lot#	(b) Building ID	(c) Type of Change to the Building's System	Design Flows (Gallons Per Day)			(g) Total	(h) Rule or Meter Based Flows
				(d) Existing	(e) Change	(f) Infiltration		
X	1	1	Connection to New System	0	490	0	490	Rule-based
X	1	2	Connection to New System	0	280	0	280	Rule-based
Add Another Lot/Building Served by this System				6	7	8	9	
				0	770	0	770	

10 Is this wastewater disposal system located off-lot? Yes No

11 Is this wastewater disposal system shared? Yes No

If the wastewater disposal system is located off-lot or shared, submit a copy of the agreement to provide an easement prior to initiation of construction.

12 Is a variance being requested for this wastewater disposal system? Yes No

If Yes, please submit additional details related to the variance request.

13 If this wastewater disposal system type is a connection to an Indirect Discharge System, please provide the Indirect Discharge System ID number.

Indirect Discharge System ID Number

14 If this wastewater disposal system type is a connection to a municipal system, please select the town.

Town

15 If this wastewater disposal system is a soil-based system, please select the design approach used.

Design Approach Used
Performance Based

16 For soil-based systems, please check all that apply (Note: Store and dose does not apply to standard pump/pump chamber systems).

Storage and Dose Filtrate Constructed Wetlands

17 If this is an Innovative/Alternative soil-based system, please select the system use type.

Innovative/Alternative System Use Type

18 If this is an Innovative/Alternative soil-based system, please select the Innovative/Alternative system or product.

Innovative/Alternative System or Product

Remove This Wastewater System

Add Another Wastewater System

Section D - Wastewater Disposal Systems Design Flows Summary Table

1 If the project includes more than one wastewater disposal system, please list each system on this page and provide the total wastewater disposal design flows for the project. **IMPORTANT:** Please don't include systems that were identified in this Part on Section C, Line 4 as a "Replacement Area Designation" in this summary table.

		Design Flows (Gallons Per Day)			
(a) Wastewater Disposal System Name/Identifier	(b) Existing	(c) Change	(d) Infiltration	(e) Total	
X Lot 1 Mound	0	770	0	770	
Add Another Wastewater System	2	3	4	5	
	0	770	0	770	

Part VII Application Fees

1 Fee Amount

\$500.00

2 Fee Calculation Details

New Water & Wastewater Systems = \$500.00

Part VIII Designer Certification & Copyright License			
Section A - Certifying Designer 1 Certification & Copyright License			
<p>"I hereby certify that in the exercise of my reasonable professional judgment, the design-related information submitted with this application is true and correct, and that the design included in this application for a permit complies with the Vermont Wastewater System and Potable Water Supply Rules and the Vermont Water Supply Rules.</p> <p>As the individual who prepared this application, including all documents that are marked as copyrighted, I hereby grant a non-exclusive, limited license to the State to allow the documents to be made available for public review and copying in order to properly implement and operate the permitting programs for Wastewater Systems and Potable Water Supplies, and for no other purposes. As a condition to this license, the State agrees that it will not make any changes to such documents, nor will the State delete any copyright notices on such documents."</p>			
<p>1 Check the design(s) you are certifying. This should be the same as the Designer Role(s) you selected in Part II, Section A, Line 13.</p> <p><input checked="" type="checkbox"/> Water Supply Designer</p> <p><input checked="" type="checkbox"/> Wastewater Disposal System Designer</p>			
<p>1 Designer 1 Name</p> <p>Stephen Revell</p>	<p>2 Designer 1 Signature</p> 	<p>3 Signature Date</p> <p>11/13/13</p>	
Section B - Certifying Designer 2 Certification & Copyright License			
<p>"I hereby certify that in the exercise of my reasonable professional judgment, the design-related information submitted with this application is true and correct, and that the design included in this application for a permit complies with the Vermont Wastewater System and Potable Water Supply Rules and the Vermont Water Supply Rules.</p> <p>As the individual who prepared this application, including all documents that are marked as copyrighted, I hereby grant a non-exclusive, limited license to the State to allow the documents to be made available for public review and copying in order to properly implement and operate the permitting programs for Wastewater Systems and Potable Water Supplies, and for no other purposes. As a condition to this license, the State agrees that it will not make any changes to such documents, nor will the State delete any copyright notices on such documents."</p>			
<p>1 Check the design(s) you are certifying. This should be the same as the Designer Role(s) you selected in Part II, Section B, Line 13.</p> <p><input type="checkbox"/> Water Supply Designer</p> <p><input type="checkbox"/> Wastewater Disposal System Designer</p>			
<p>1 Designer 2 Name</p>	<p>2 Designer 2 Signature</p>	<p>3 Signature Date</p>	
Part IX Applicant(s) Signature & Acknowledgements			
<p>In order to insure compliance with the requirements of the regulations administered by the Department of Environmental Conservation, Drinking Water & Groundwater Protection Division, it may be necessary to visit the property. As this would involve a Department employee entering private property, we request your approval to do so.</p>			
<p>1 If we do visit your property, do you have any special instructions?</p> <div style="border: 1px solid black; height: 30px; width: 100%;"></div>			
<p>"As landowner of the property for which I am requesting a permit from the Department of Environmental Conservation, I understand that by signing this application I am granting permission for the Department employees to enter the property, during normal working hours, to insure compliance of the property with the applicable rules of the Department.</p> <p>I also understand that I am not allowed to commence any site work or construction on this project without written approval from the Department of Environmental Conservation.</p> <p>If my project utilizes an Innovative/Alternative System or Product, I have received a copy of the Drinking Water & Groundwater Protection Division's approval letter and agree to abide by the conditions of the approval.</p> <p>I also certify that to the best of my knowledge and belief the information submitted above is true, accurate and complete."</p>			
<p>X 2 Print Applicant Name</p> <p>Clark W. Hinsdale III</p>	<p>3 Applicant Signature</p>	<p>4 Signature Date</p>	
<p>Add Applicant Signature Block</p>			

ANR Form 5: Certification Statement for Wastewater System and Potable Water Supply Permits when there is no Required Notification of Overshadowed Property Owner(s)

A person submitting an application to the Secretary for a Wastewater System and Potable Water Supply Permit shall use this statement whenever overshadowing notification of affected landowners is not required (see guidance and instructions for examples).

Note: When the property subject to the permit application is owned by more than one person, only one of the landowners must sign this certification statement even though all landowners must sign the permit application itself.

I hereby certify that "overshadowing" notification is not required either because there is an exemption to the notification requirement or there are no landowners whose property may be affected by the proposed water and wastewater systems.

Signature _____

Name (Printed) Clark W. Hinsdale III

Property Address or Property Tax ID # NE Corner Guinea & Bingham Brook Rd

Date of this certification _____

(To Comply with Act 145 and Act 117 - 8-24-12 Last Revised 9-11-12)

**Soil Profile Descriptions
Hinsdale Parcel B
Guinea & Bingham Brook Rd.
October 21, 2013**

**By Stephen Revell CPG Licensed Class B Designer
And Hydrogeologist with Spencer Harris, Town of Charlotte**

Test Pit #1 (TP-1)

- | | |
|--------|---|
| 0-10" | Brown very fine to fine sandy loam, friable, moderate to strong fine blocky structure, well drained |
| 10-20" | Brown clay loam, coarse blocky structure, friable to firm, mottled |
| 22-48" | Orange-brown fine sandy loam, loose to friable, fine blocky structure, mottled |

Test Pit #2 (TP-2)

- | | |
|--------|---|
| 0-10" | Brown very fine to fine sandy loam, friable, moderate to strong fine blocky structure, well drained |
| 10-24" | Brown clay loam, coarse blocky structure, friable to firm, mottled |
| 24-48" | Orange-brown fine sandy loam, loose to friable, fine blocky structure, mottled |

Test Pit #3 (TP-3)

- | | |
|--------|---|
| 0-10" | Brown very fine to fine sandy loam, friable, moderate to strong fine blocky structure, well drained |
| 10-20" | Brown clay loam, coarse blocky structure, friable to firm, mottled |
| 20-42" | Orange-brown fine sandy loam, loose to friable, fine blocky structure, mottled |



Lincoln Applied Geology, Inc.
Environmental Consultants

Test Pit #4 (TP-4)

- 0-10" Brown very fine to fine sandy loam, friable, moderate to strong fine blocky structure, well drained
- 10-24" Orange-brown/yellow-brown fine sandy loam, fine blocky structure, loose to friable, mottled
- 24-40" Olive-gray fine sandy loam, friable to firm, mottled

Test Pit #5 (TP-5)

- 0-12" Brown very fine to fine sandy loam, friable, moderate to strong fine blocky structure, well drained
- 12-30" Brown clay loam, coarse blocky structure, friable to firm, mottled
- 30-48" Orange-brown fine sandy loam, loose to friable, fine blocky structure, mottled

Test Pit #6 (TP-6)

- 0-10" Brown very fine to fine sandy loam, friable, moderate to strong fine blocky structure, well drained
- 10-24" Brown clay loam, coarse blocky structure, friable to firm, mottled
- 24-42" Orange-brown fine sandy loam, loose to friable, fine blocky structure, mottled

Test Pit #7 (TP-7)

- 0-10" Brown very fine to fine sandy loam, friable, moderate to strong fine blocky structure, well drained
- 10-22" Brown clay loam, coarse blocky structure, friable to firm, mottled
- 22-44" Orange-brown fine sandy loam, loose to friable, fine blocky structure, mottled



Lincoln Applied Geology, Inc.
Environmental Consultants

Test Pit #8 (TP-8)

- 0-10" Brown very fine to fine sandy loam, friable, moderate to strong fine blocky structure, well drained
- 10-22" Brown clay loam, coarse blocky structure, friable to firm, mottled
- 22-44" Orange-brown fine sandy loam, loose to friable, fine blocky structure, mottled

Test Pit #9 (TP-9)

- 0-10" Brown very fine to fine sandy loam, friable, moderate to strong fine blocky structure, well drained
- 10-22" Brown clay loam, coarse blocky structure, friable to firm, mottled
- 22-44" Orange-brown fine sandy loam, loose to friable, fine blocky structure, mottled

Test Pit #10 (TP-10)

- 0-10" Brown very fine to fine sandy loam, friable, moderate to strong fine blocky structure, well drained
- 10-20" Orange-brown/yellow-brown fine sandy loam, fine blocky structure, loose to friable
- 20-38" Olive-gray fine sandy loam, friable to firm, mottled

Test Pit #11 (TP-11)

- 0-10" Brown very fine to fine sandy loam, friable, moderate to strong fine blocky structure, well drained
- 10-22" Brown clay loam, coarse blocky structure, friable to firm, mottled
- 22-40" Orange-brown fine sandy loam, loose to friable, fine blocky structure, mottled



**Testimentary Trust of Clark W. Hinsdale Jr.
 Intersection of Guinea Road Bingham Brook Road
 Charlotte, Vermont**

Percolation Test Results

All tests were performed on November 1, 2013, Year at a depth of 10"

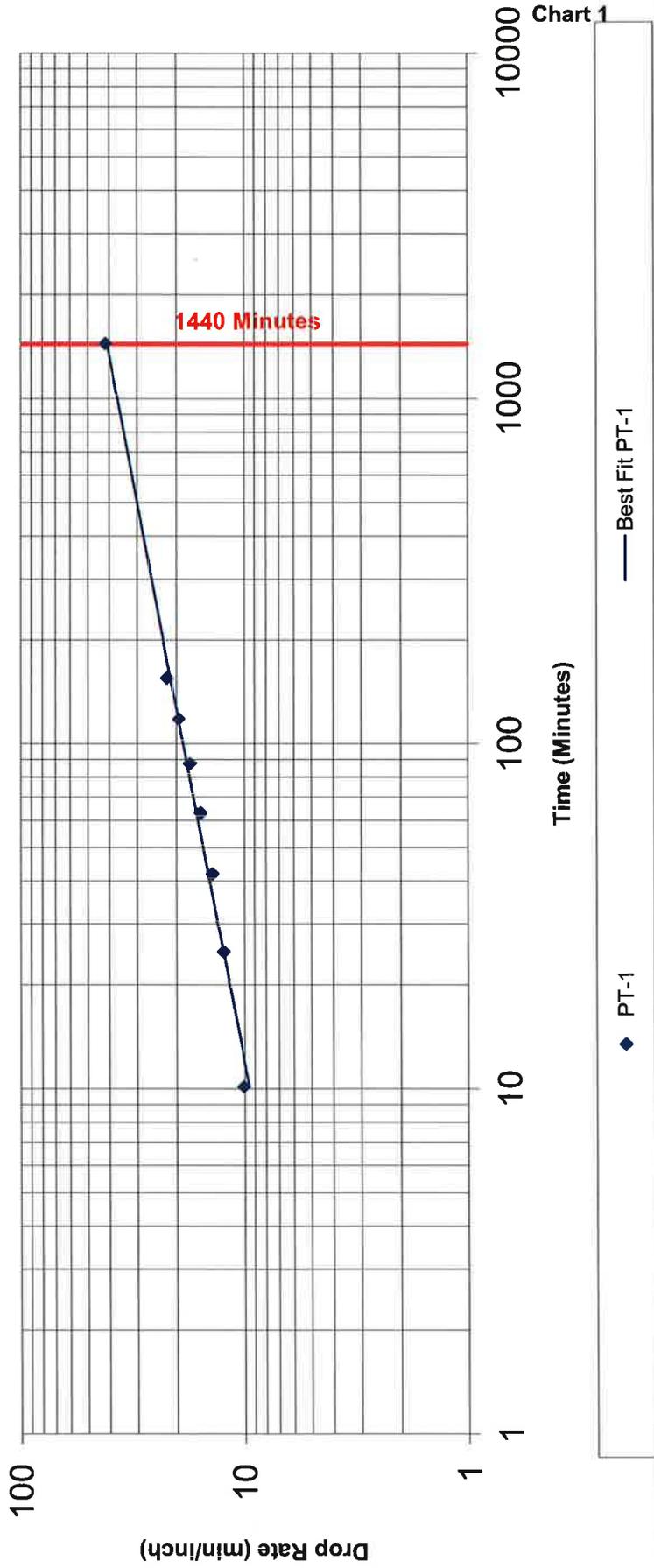
PT-1	Drop Time (min)	Total Drop Time (min)	Total Drop (inches)	Drop Rate (min/inch)
	10.1	10.1	1	10.1
	14.8	24.9	2	12.5
	16.9	41.8	3	13.9
	21.0	62.8	4	15.7
	24.6	87.3	5	17.5
	30.2	117.5	6	19.6
	36.5	154.0	7	22.0
	---	1440.0	---	41.8

*NOTE:
 Drop time includes fill time for each of the seven runs.

Testimentary Trust of Clark W. Hinsdale Jr.
Intersection of Guinea Road and Bingham Brook Road
Charlotte, Vermont

Percolation Test Results

All tests were performed on November 1, 2013, Year at a depth of 10"



**Site Specific Effluent Mounding Analysis
Hinsdale Parcel B Property
Guinea Rd./Bingham Brook Rd.**

In order to support the proposed performance based mound-type disposal system design and show that the soils can accommodate the design flow rate associated with a year-round four-bedroom residence and two-bedroom apartment, a site specific hydrogeologic analysis using Darcy's Law was conducted. The following formula was used to determine the ability of the soil to accept the proposed amount of wastewater and determine its impact on the shallow seasonal ground water system.

Using the equation:

$$Q = k \cdot i \cdot h \cdot l$$

Where: Q= Volume= 770 gallons/ day = 103 ft³/ day;
k= Hydraulic Conductivity = 30 ft./ day (approved k value for very fine to fine sandy loam with strong blocky structure);
i= Gradient = 7.7% = 0.077 ft./ ft.;
h= 0.33" effluent mound height;
l= x mound length.

When solving this equation for l, or 136' an effluent mound of 0.33' was used. Since evidence of a seasonal high ground water system was identified at 10" or 0.83' with an induced mound of 0.33', 0.50' feet of unsaturated soil will remain. To maintain the required 3' separation to the induced mound, 3' - 0.5' or 2.5' of state approved mound sand is required beneath the application area.

F:\CLIENTS\2013\13137\Site Specific Effluent Mounding Analysis.doc



Lincoln Applied Geology, Inc.
Environmental Consultants

PRESSURE DISTRIBUTION & MOUND DIMENSION DETAILS

CLIENT'S NAME: Hinsdale Parcel B
 DATE: 11/5/2013 PERFORMED BY: S. Revell LAG Project #: 13137

Design Flow Rate	770	GPD
Width of Distribution Stone Bed/Trench	5.7	FEET
Length of Distribution Stone Bed/Trench	136	FEET
Thickness of Sand Beneath Distribution Stone Bed/Trench	2.5	FEET
Thickness of Stone Beneath Laterals	6	INCHES
Soil Cover Thickness at Edge of Level Area	12	INCHES
Front Slope of Finished Mound	33	PERCENT
Side and Rear Slope of Finished Mound	33	PERCENT
Percolation Rate	40	MPI
Natural Ground Slope	7.7	PERCENT
Thickness of Sand on Upper Side of Level Area	3.17	FEET
Thickness of Sand on Lower Side of Level Area	3.77	FEET
Width of Level Area	7.7	FEET
Length of Level Area	138	FEET
Area of Distribution Stone Bed/Trench	775	SQUARE FT
Volume of Stone Required	18	CUBIC YARDS
Proposed Basal Area	3208	SQUARE FEET
Volume of Mound Sand Required	548.9	CUBIC YARDS
Number of Laterals	2	
Length of Each Lateral	66	FEET
Number of Orifices in the Manifold	0	
Number of Orifices in Each Lateral	17	
Distance Between Manifold and First Orifice	2	FEET
Distance Between Orifices (on center)	4	FEET
Distribution Area per Orifice	22.80	SQ. FT.
Design Pressure Head	3	FEET
Diameter of Orifices (enter as fraction)	0.188	INCHES
Elevation From Pump Intake to Laterals (0 if siphon)	20	FEET
Diameter of Force Main	2	INCHES
Length of Force Main	2000	FEET
Length of Manifold to Lateral	0	FEET
Diameter of Manifold Pipe	2	INCH
Diameter of Lateral Pipe	2	INCH
Friction Loss in Force Main	24.30	FEET
Friction Loss in Manifold	0.00	FEET
Friction Loss in Section 1	0.01	FEET
Friction Loss in Entire Lateral	0.07	FEET
Discharge Rate at First Orifice	0.72	GPM
Discharge Rate at Last Orifice	0.71	GPM
Percent Difference in Flow Rate First to Last Orifice	1.05	PERCENT
Total Dynamic Head Loss	47.441	FEET
Total Distribution System Flow	24.40	GPM
Volume of Distribution System	21.54	GALLONS
Pump Capacity	24.40 GPM vs	47.441 FEET OF HEAD
Volume per Dose		300 GALLONS
On/Off Float Swing (1,000 gal. Tank)		10.0 INCHES

PRESSURE DISTRIBUTION & MOUND DIMENSION DETAILS

CLIENT'S NAME: Hinsdale Parcel B
 DATE: 11/5/2013 PERFORMED BY: S. Revell LAG Project #: 13137

DIMENSIONS OF MOUND SYSTEM

Dimensions of Mound Sand

7.8 feet from level area to uphill sand toe	11.0 ft corner of level area to upper toe corner
7.7 ft wide level area	9.6 ft to side toe from upper edge of level area
5.7 ft wide stone bed/trench	
136 ft long stone bed/trench	11.4 ft to side toe from lower edge of level area
138 ft long level area	
14.9 feet from level area to downhill sand toe	21.1 ft corner of level area to lower toe corner

Dimensions of Final Cover

10.3 feet from level area to uphill toe	14.5 ft corner of level area to upper fill toe
	12.6 ft to side toe from upper edge of level area
7.7 ft wide level area	
138 ft long level area	14.4 ft to side toe from lower edge of level area
	26.6 ft corner of level area to lower fill toe
18.8 feet from level area to downhill toe	

PLOW AREA LAYOUT MEASUREMENTS

Center of Bed/Trench to Downslope Toe	90.7 feet
End of Level Area @ Midpoint to Downslope Toe	29.5 feet
Center of Bed/Trench to Upslope Toe	80.5 feet
End of Level Area @ Midpoint to Upslope Toe	17.4 feet

HYDROMATIC®

SHEF50/100

Submersible High Head Effluent Pumps

Applications:

- Septic Tank Effluent
- High Head Sump
- Dewatering



SHEF100 Features:

- 1 HP
- 208-230 voltage (1Ø)
208-230/460, 575 voltage (3Ø)
- 2" Discharge
- 3/4" solids handling
- Capacities to 87 GPM
- Heads to 90 Feet
- Automatic or Manual Models

SHEF50 Features:

- 1/2 HP
- 115/208-230 dual voltage (1Ø)
208-230/460, 575 voltage (3Ø)
- 2" Discharge
- 3/4" solids handling
- Capacities to 63 GPM
- Heads to 63 Feet
- Automatic or Manual Models



HYDROMATIC®
Pentair Pump Group

SHEF100 Shown

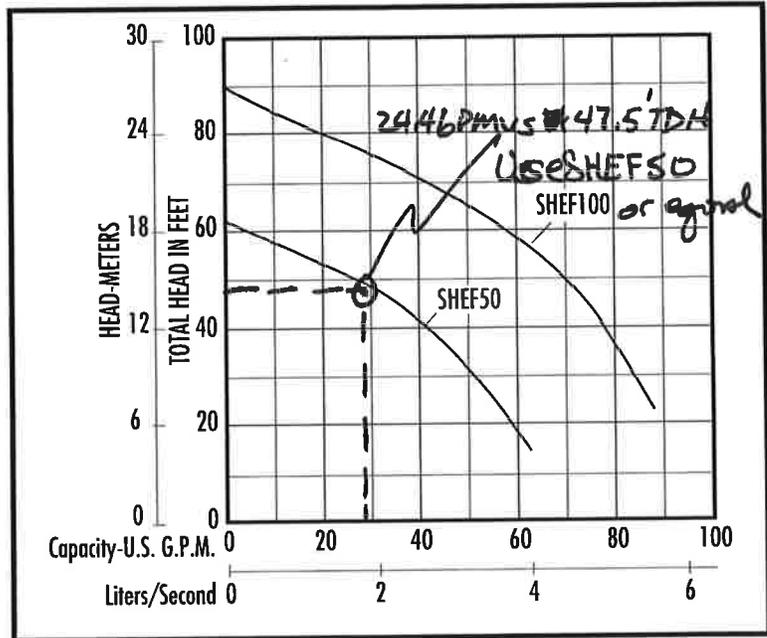
SHEF50/100 Submersible Effluent Pumps

Details

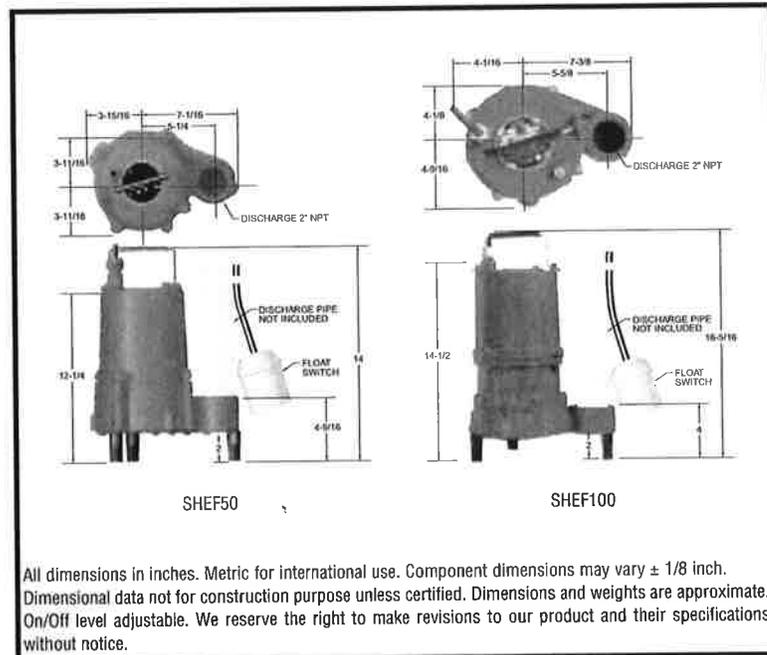
Pump Characteristics

Pump/Motor Unit	Submersible				
Manual Models (50)	M1	M2	M3	M4	M5
Automatic Models	A1	A2	-	-	-
Horsepower	1/2				
Full Load Amps	15.0	7.6/7.1	3.2/3.1	1.6	1.2
Motor Type	Capacitor Start				
R.P.M.	3450				
Phase Ø	1 Ø		3 Ø		
Voltage	115	208-230	208-230	460	575
Manual Models (100)		M2	M3	M4	M5
Automatic Models		A2	-	-	-
Horsepower	1				
Full Load Amps	13.6/12.1	6.0/5.8	2.8	1.9	
Motor Type	Capacitor Start		3 Ø		
R.P.M.	3450				
Phase Ø	1 Ø		3 Ø		
Voltage	208-230	208-230	460	575	
Hertz	60				
Temperature	140°F Max Fluid Temp.				
NEMA Design	L		B		
Insulation	Class B				
Discharge Size	2" NPT std.				
Solids Handling	3/4"				
Unit Weight	58 lbs. (50)		65 lbs. (100)		
Power Cord	115V, 14/3, SJTW-A; 230V, 1ø, 16/3 SWT-A; 3ø, 16/4, STW-A, All cords 20' std. with 30' opt.				

Performance Data



Dimensional Data



All dimensions in inches. Metric for international use. Component dimensions may vary $\pm 1/8$ inch. Dimensional data not for construction purpose unless certified. Dimensions and weights are approximate. On/Off level adjustable. We reserve the right to make revisions to our product and their specifications without notice.

Materials of Construction

Handle	Stainless Steel
Lubricating Oil	Dielectric Oil
Motor Housing	Cast Iron
Pump Casing	Cast Iron
Shaft	Stainless Steel
Mechanical Shaft Seal	Seal Faces: Carbon/Ceramic Seal Body: Brass Spring: Stainless Steel Bellows: Buna-N
Impeller	Engineered Thermoplastic
Upper Bearing	Single Row Ball Bearing
Lower Bearing	Single Row Ball Bearing
Bottom Plate	Single Row Ball Bearing
Fasteners	Stainless Steel
Legs	Engineered Thermoplastic

HP HYDRAMATIC®
Pentair Pump Group

USA

1840 Boney Road Ashland, Ohio 44805
Tel: 419-289-3042 Fax: 419-281-4087

www.hydromatic.com

—Your Authorized Local Distributor—

CANADA

269 Trillium Drive Kitchener, Ontario, Canada N2G 4W5
Tel: 519-896-2163 Fax: 519-896-6337

Item #: W-02-6370 12/99 10M

WELL-X-TROL QUICK SIZING FORM

(We suggest you make an office copy of this page when ready to calculate.)

For selecting WELL-X-TROLS for a different running time than ESP I or ESP II, and/or at pressure ranges the same or different than 20/40, 30/50, 40/60:

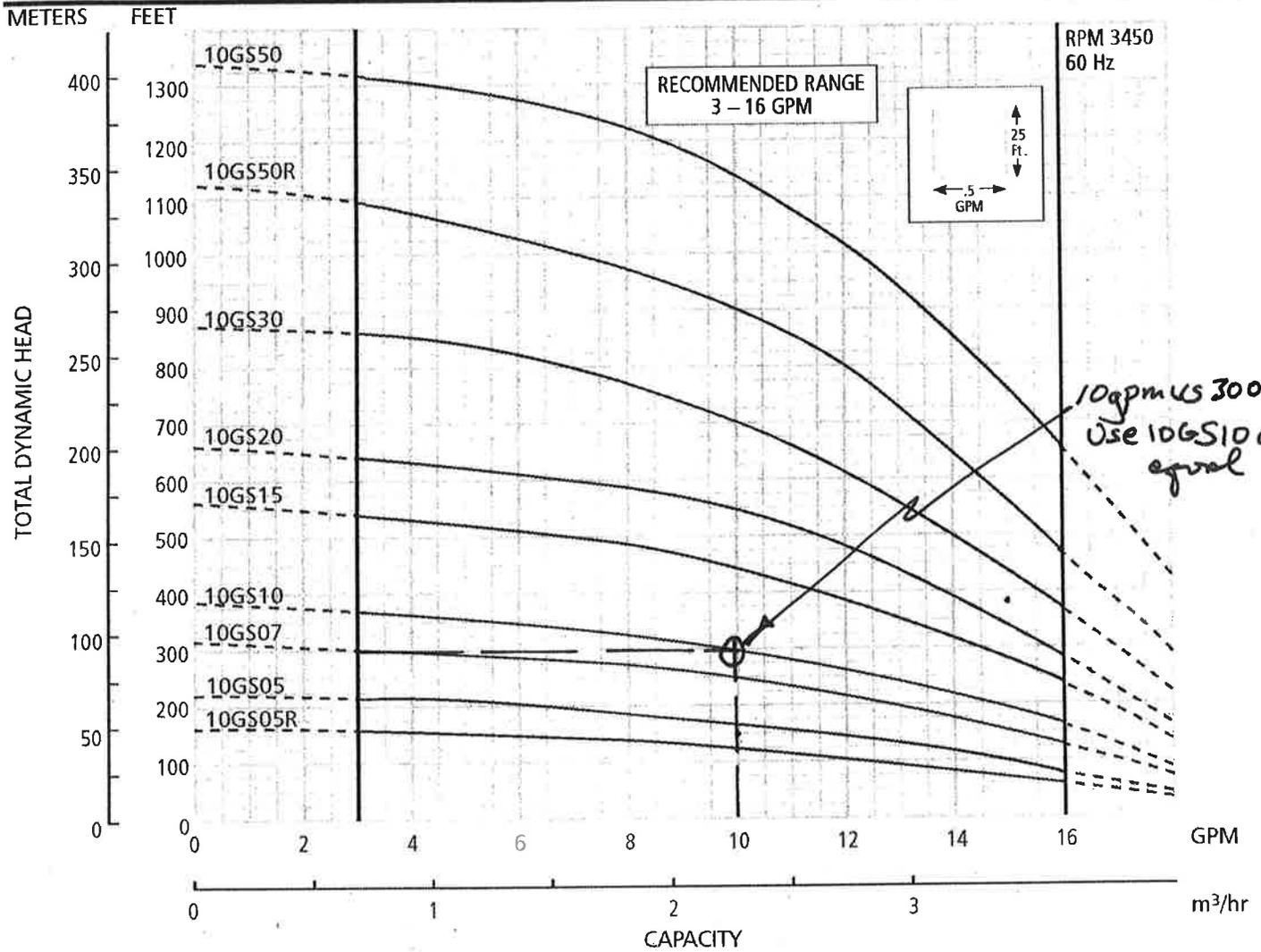
THINGS YOU MUST KNOW

1. System flow rate (pump capacity or discharge) 10 GPM
2. Desired running time, in minutes and fractions of minutes (1.5 min. = 1 min. 30 sec.) 1.5 Min.
3. Pump cut-in, in gauge pressure 40 Psig
4. Pump cut-out, in gauge pressure 60 Psig

CALCULATING TANK SIZE

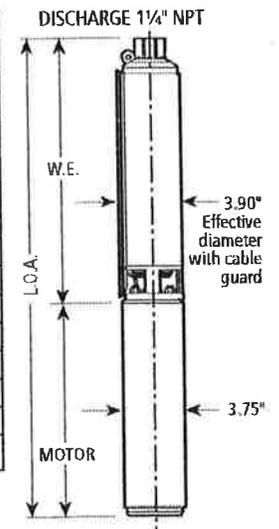
5. Multiply Line 1 by Line 2 and enter ESP Volume 11.5 ESP Vol.
6. Refer to Table 1. Find pressure factor for Line 3 and Line 4 and enter 0.27 P.F.
7. Divide Line 5 by Line 6 and enter minimum total WELL-X-TROL Volume 43 Gals.
8. Refer to Table 2 and select WELL-X-TROL model that is greater than Line 7 for "Total Volume" and Line 5 is less than "Maximum ESP Volume" 250 WX No.

Model 10GS



DIMENSIONS AND WEIGHTS

Model	HP	Phase	Stages	Length (inches)			Weight (lbs.)		
				W.E.②	Motor	L.O.A.③	W.E.	Motor	Total
10GS05412R,22,11,21④	1/2 R④	1	5	9.6	9.5	19.1	6	19	25
10GS05412,22,11,21	1/2	1	7	11.0	9.5	20.5	7	19	26
10GS07412,22	3/4	1	10	13.0	10.7	23.7	8	21	29
10GS10412,22	1	1	12	14.4	11.8	26.2	9	24	33
10GS15412	1 1/2	1	17	17.9	13.6	31.5	11	28	39
10GS15422	1 1/2	1	17	17.9	15.1	33.0	11	31	42
10GS15432	1 1/2	3	17	17.9	11.8	29.7	11	24	35
10GS20④	2	1	20	20.0	15.1	35.1	12	33	45
10GS20④	2	3	20	20.0	13.6	33.6	12	28	40
10GS30④	3	1	27	26.0	19.1	45.1	15	41	56
10GS30④	3	3	27	26.0	16.1	42.1	15	35	50
10GS50④	5	1	42	36.3	28.2	64.5	20	70	90
10GS50④	5	3	42	36.3	22.2	58.5	20	55	75
10GS50R④	5	1	35	32.8	28.2	61.0	21	70	91



- ① Reduced stage 1/2 HP pump/water end for low head applications. This model replaces the 1/2 HP water end.
- ② W.E. = water end or pump without motor.
- ③ L.O.A. = length of assembly – complete pump – water end and motor.
- ④ See Price Book for Complete Pump Order Numbers, 2 HP and larger units are not preassembled.